[Introduction]

In 1981 a new method for obtaining direct sagittal CT scans of the brain has been introduced in our clinic. This way of examination avoids the disadvantages involved in mathematical reconstruction technique, such as prolonged examination time, as a consequence of multiple thin or overlapping sections at specific preselected sites, increased radiation dose to the patient, decreased radiographic tube life, time-consuming “postprocessing”, inferior topography as a result of small image stripes, decreased spatial resolution and greater susceptibility to patient motion.

[Method and Materials]

Until now more than 100 patients have been examined—aged 5 to 75 years. The construction of our fast whole body scanner—a Philips Tomoscan 300—in combination with a newly designed head-holder has made it possible to obtain anatomically rather accurate direct longitudinal, reproducible sections of the head. Bone and soft tissue details can be visualized with clinically useful spatial and density resolution.

The diagrammatic representation (Fig. 1) illustrates the positioning: The patient is placed—left or right anterior oblique—at the back side of the scanner at an inclined plane. Both arms are stretched along the hips. The head lies against a foam plastic head support fixed to the top of the examination table. This device helps to parallel the sagittal plane of the head with the scan plane of the fan beam ensuring that the head accurately follows the automatic table indexing. The gantry is tilted 20 degrees forward. The scanner has 288 Xenon...
detectors, a 256 reconstruction matrix and a primary geometric enlargement for head scans. In the following we would like to demonstrate applicational examples with regard to clinical findings.

**Cases**

1. Patient H.I., female, aged 43 (no. 10247/81). One morning in October 1981 she complained of dizziness, vomiting and weakness of the left side. She was admitted to our hospital two weeks later. We found a discrete spastic hemiparesis on the left side without signs of increased intracranial pressure. The standard axial CT of the brain revealed no pathological findings. The sagittal scan showed an ischaemic lesion of the right upper brain stem, stage II–III (Fig. 2).

![Diagrammatic representation of the patient's positioning used in direct sagittal CT](image)

**Fig. 1.** Diagrammatic representation of the patient’s positioning used in direct sagittal CT

2. Patient N.C., male, aged 16 (no. 400/81). The patient developed within three months a headache, episodes of vomiting and confusion, diplopia and other signs of increased intracranial pressure. On the basis of an axial CT examination an internal hydrocephalus was found and treated by ventricular drainage. We evaluated the pathological situation positionally in three planes. A single image (Fig. 3) shows a suspected pinealoma in the multi-image display mode.

3. Patient S.F., male, aged 50 (no. 1414/81). Four months before the patient was admitted to our clinic, he noticed a loss of feeling in the right part of the face together with a weakness of the ipsilateral chewing muscles and of the mouth. We found a hypaesthesia and algesia of the right trigeminal nerve and a paresis of the masseter muscle and of the inferior parts of the muscles innervated by the facial nerve.

The three-plane evaluation of the midbrain/brain stem region by computer tomography revealed a tumour-like hypodense lesion (Fig. 4) on the right side related to the course of the trigeminal and facial nerve.